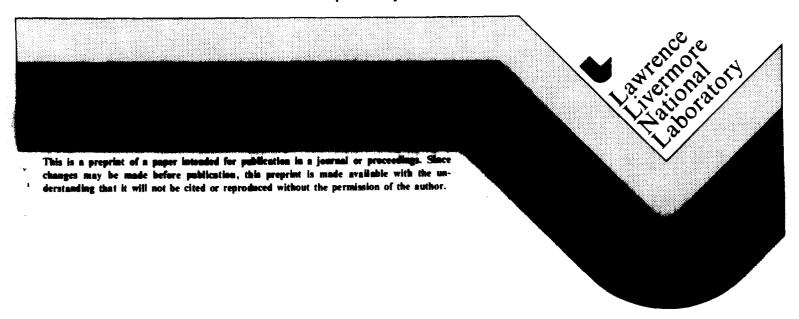
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THE Be-Hg (BERYLLIUM-MERCURY) SYSTEM

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To date there has been no additional information about the Be-Hg system other than that cited in [Hansen] and [Elliott].

Be seemed to be insoluble in liquid Hg [26Bod, 56Str]. Very limited solubility was observed by [50Kel] as follows:

Temperature,	Composition, x10-4at.% Be
800	8.9
100	0.22

The melting point of (β Be) and the (β Be) --> (α Be) allotropic transformation temperature are 1289±4 and 1270±6 °C, respectively [85BAP]. The melting point of Hg is -38.836 °C [Melt].

[57Kel, 58Holl prepared an amalgam of Be by electrolyzing a NaCl-BeCl $_{\odot}$ fused salt mixture into a Hg cathode. By analogy with the Hg-Mg system, it was speculated that the compound BeHg $_{\odot}$ was formed.

A summary of crystal structure and lattice parameter data is given in Table 1.

Table 1 Be-Hg Crystal Structure and Lattice Parameter Data

Struktur Composition, Pearson bericht			Space	Proto-	Lattice parameters, nm			
Phase at.% Hg	symbol	designation	group	type 	a	c 	Reference	
(ßBe)0	c12	A2	I m3 m	W	0.25515		[King2]	
(αBe), 0	hP2	EA	P6 a/mmc	Mg	0.22857	0.35839	[King1]	
ВеНg₂ 66.7	?	? 、	?	?	?	?	[57Kel]	
(αHg)100	hR1	A10	R3m	Hg	0.3005	α=70.53	• [King1]	

General References

[Hansen]: M. Hansen and K. Anderko, <u>Constitution of Binary Alloys</u>, McGraw-Hill, New York or General Electric Co., <u>Business Growth Services</u>, Schenectady, NY 12345 (1958)

[Elliott]: R.P. Elliott, Constitution of Binary Alloys, First Supplement, McGraw-Hill, New York or General Electric Co., Business Growth Services, Schenectady, NY 12345 (1965)

[Melt]: "Melting Points of the Elements," Bull. Alloy Phase Diagrams, 2(1), 145-146 (1981)

[Kingl]: H.W. King, "Crystal Structures of the Elements at 25 °C," <u>Bull. Alloy Phase Diagrams</u>, 2(3), 401-402 (1981)

[King2]: H.W. King, "Temperature-Dependent Allotropic Structures of the Elements," <u>Bull. Alloy Phase Diagrams</u>, <u>3</u>(2), 275-276 (1981)

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- 26Bod: S. Bodforss, "The Electrochemistry of Beryllium," <u>Z. Phys. Chem.</u>, <u>124</u>, 66-82 (1926). (Equi Diagram; Experimental)
- 50Kel: L.R. Kelman, W.D. Wilkinson, and F.L. Yaggee, "Resistance of Materials to attack by Liquid Metals," ANL-4417, 66-67, Argonne national Labotatory, July (1950). (Equi Diagram; Experimental)
- 56Str: J.F. Strachan and N.L. Harris, "The Attack of Unstressed Metals by Liquid Mercury", J. Inst. Met., 85, 17-24 (1956). (Equi Diagram; Experimental)
- 57Kel: M.C. Kells, R.B. Holden, and C.I. Whitman, "The Preparation of Beryllium Amalgam," J. Am. Chem. Soc., 79(14), 3925 (1957). (Equi Diagram; Experimental)
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- 85BAP: to be published in <u>Bull. Alloy Phase Diagrams</u>, (1985). (Equi Diagram; Compilation)

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